Hardware User's Manual

Multicounter

Rotameter, Activity wheel

References:
LE3806 (76-0243)

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1. SYMBOLS TABLE

Recognising the symbols used in the manual will help to understand their meaning:

DESCRIPTION	SYMBOL
Warning about operations that must not be done because they can damage the equipment	
Warning about operations that must be done, otherwise the user can be exposed to a hazard.	
Protection terminal ground connection.	
Warning about a hot surface which temperature may exceed 65ºC	
Warning about a metal surface that can supply electrical shock when it's touched.	
Decontamination of equipments prior to disposal at the end of their operative life	
Waste Electrical and Electronic Equipment Directive (WEEE)	

2. GOOD LABORATORY PRACTICE

Check all units periodically and after periods of storage to ensure they are still fit for purpose. Investigate all failures which may indicate a need for service or repair.

Good laboratory practice recommends that the unit be periodically serviced to ensure the unit is suitable for purpose. You must follow preventive maintenance instructions. In case equipment has to be serviced you can arrange this through your distributor. Prior to Inspection, Servicing, Repair or Return of Laboratory Equipment the unit must be cleaned and decontaminated.

Decontamination prior to equipment disposal

In use this product may have been in contact with bio hazardous materials and might therefore carry infectious material. Before disposal the unit and accessories should all be thoroughly decontaminated according to your local environmental safety laws.

3. UNPACKING AND EQUIPMENT INSTALATION

WARNING: Failure to follow the instructions in this section may cause equipment faults or injury to the user.

A. No special equipment is required for lifting but you should consult your local regulations for safe handling and lifting of the equipment.
B. Inspect the instrument for any signs of damage caused during transit. If any damage is discovered, do not use the instrument and report the problem to your supplier.
C. Ensure all transport locks are removed before use. The original packing has been especially designed to protect the instrument during transportation. It is therefore recommended to keep the original carton with its foam parts and accessories box for re-use in case of future shipments. Warranty claims are void if improper packing results in damage during transport.
D. Place the equipment on a flat surface and leave at least 10 cm of free space between the rear panel of the device and the wall. Never place the equipment in zones with vibration or direct sunlight.
E. Once the equipment is installed in the final place, the main power switch must be easily accessible.
F. Only use power cords that have been supplied with the equipment. In case that you have to replace them, the spare ones must have the same specs that the original ones.
G. Make sure that the AC voltage in the electrical network is the same as the voltage selected in the equipment. **Never connect the equipment to a power outlet with voltage outside these limits.**

WARNING

For electrical safety reasons you only can connect equipment to power outlets provided with earth connections .
This equipment can be used in installations with category II over-voltage according to the General Safety Rules.

The manufacturer accepts no responsibility for improper use of the equipment or the consequences of use other than that for which it has been designed.

PC Control

Some of these instruments are designed to be controlled from a PC. To preserve the integrity of the equipment it is essential that the attached PC itself conforms to basic safety and EMC standards and is set up in accordance with the manufacturers' instructions. If in doubt consult the information that came with your PC. In common with all computer operation the following safety precautions are advised.

WARNING

• To reduce the chance of eye strain, set up the PC display with the correct viewing position, free from glare and with appropriate brightness and contrast settings

• To reduce the chance of physical strain, set up the PC display, keyboard and mouse with correct ergonomic positioning, according to your local safety guidelines.

Class A equipment is intended for use in an industrial environment.

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

4. MAINTENANCE

WARNING: Failure to follow the instructions in this section may cause equipment fault.

- PRESS BUTTONS SOFTLY – Lightly pressing the buttons is sufficient to activate them.
- Equipments do not require being disinfected, but cleaned for removing urine, faeces and odour. To do so, we recommend using a wet cloth or paper with soap (which has no strong odour). NEVER USE ABRASIVE PRODUCTS OR DISSOLVENTS.
- NEVER pour water or liquids on the equipment.
- Once you have finished using the equipment turn it off with the main switch. Clean and check the equipment so that it is in optimal condition for its next use.
- The user is only authorised to replace fuses with the specified type when necessary.

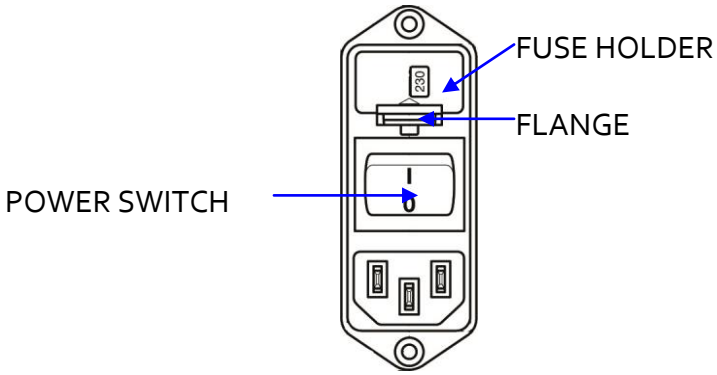

Figure 1. Power inlet, main switch and fuse holder.

FUSE REPLACEMENT OR VOLTAGE SETTING CHANGE

In case of an over-voltage or other incident in the AC net making it impossible to turn on the equipment, or if the equipment voltage setting is incorrect, check fuses according to the following procedure.

1 Remove power cord from the power inlet.

2 Open fuse-holder by pulling the flange with a regular screwdriver.

Figure 2. Open fuse-holder door.

3 Extract fuse holder pulling it.

Figure 3. Extract fuse-holder.

4 Replace fuses if necessary. Insert fuses in the fuse-holder in the correct position.

5 Insert the fuse-holder again, positioning it according to the voltage in the AC net.

115V POSITON

230V POSITION

Figure 4 Fuse holder position.

6 If the fuses blow again, unplug the equipment and contact technical service.

WARNING

For electrical safety reasons, never open the equipment. The power supply has dangerous voltage levels.

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6. INTRODUCTION

The **LE 3806 Multicounter** is a general purpose instrument designed to facilitate data acquisition. For the **Multicounter,** data consist of changes in the electrical voltage of an input channel, which changes from 0V DC to a positive voltage between +2V DC and +28V DC. When this takes place, the **Multicounter** increments the saved value in a counter linked to each one of the 30 fully independent input channels, which totals the number of "events" that have taken place on each input channel.

Figure 5. LE 3806 Multicounter.

A keyboard-driven menu enables working conditions to be selected. Among them there are - the time intervals at which the data acquisition is carried out, the number of active input channels, the information accumulation method.

The information can be accessed on a digital display, and remains unchanged in the instrument as long as it is not deleted using the direct memory delete operation. The data can be sent to any other device that is fitted with an RS-232 communications interface (port).

The basic information parameter of the **Multicounter** is a "sample". A sample is the numerical value saved in the counter associated with an input channel during a selected time interval. Whenever a sample is completed, the value present in the counter is transferred to the permanent memory of the instrument and the counter is reset to zero.

Both the duration of the sampling interval (the time over which a sample must be saved) and the total run time are programmable. The value selected for both parameters determines the number of samples to be saved, which is the **whole part of the ratio between both of them**. The diagram in Figure 6 shows the relationship between these parameters.

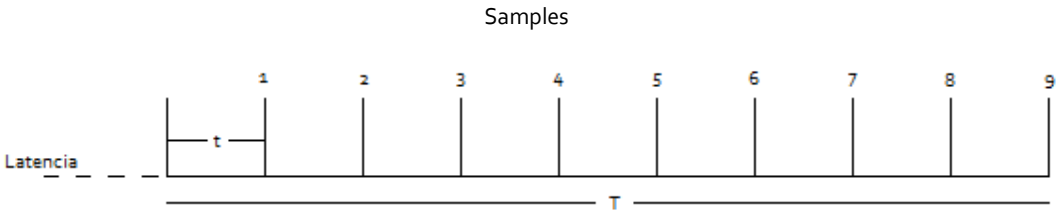

Figure 6. Relationship between the timing parameters defining an experiment.

Where:

t = duration of the sampling interval

T= duration of the experiment

The whole set, comprised by the definition of the duration of the experiment, the duration of the sampling interval, the number of active channels, and those corresponding to the samples obtained on each of the active channels, make up a functional unit called an experiment. The number of experiments that can be stored in the memory of the **Multicounter** depends on the value of each of the parameters mentioned: the greater the number of active channels and the shorter the sampling time interval, the greater the amount of data to be saved and, therefore, the fewer experiments that can be stored in the memory.

The memory storage capacity taken up by each "experiment" block is not necessarily the same. Once an experiment has finished, it is possible to carry out a new one using the same conditions as the previous case, or modified conditions (in parameters such as the number of channels, the sampling duration or interval). The block that is the result of this new experiment will differ from the previous one depending on the magnitude of the change in the parameters indicated. Consequently, the memory space needed to store it will change.

7. EQUIPMENT DESCRIPTION

7.1. CONTROL UNIT FRONT PANEL

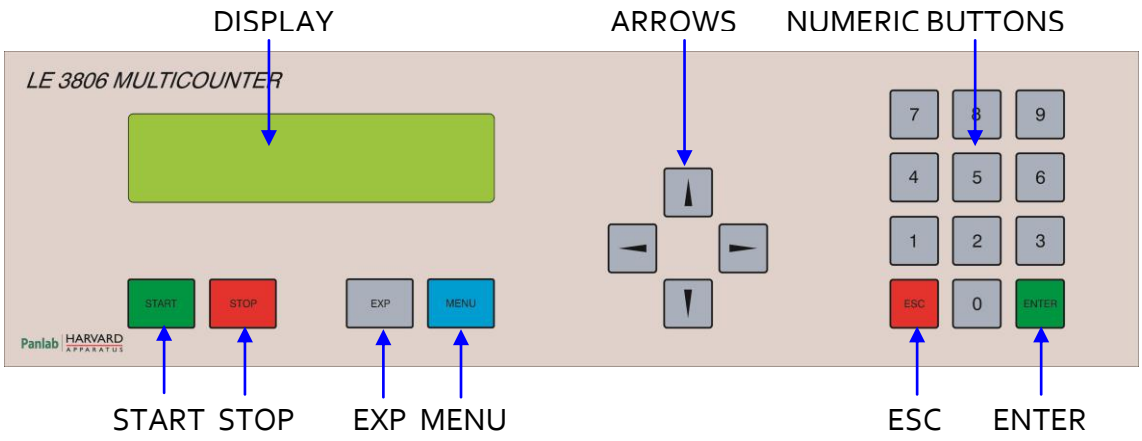

Figure 7. LE 3806 Front Panel.

- **DISPLAY:** Display with 2 rows and 16 character columns. Menus and acquired data are shown on the display.

- **UP AND DOWN ARROW BUTTONS (↑, ↓):** These buttons move up or down through the input channel whose data is shown on the display area corresponding to this information. This function is accessible when an experiment is running.

- **LEFT AND RIGHT ARROW BUTTONS (←, →):** Moves up or down through the sample number, the value of which is shown on the display. It is not possible to access this function while an experiment is running.

- **NUMERICAL BUTTON BOARD:** Numerical buttons are used to introduce parameter values when an experiment is being set up.

- **START:** This is the control button for starting an experiment. Pressing this button starts a series of events, beginning with the verification of the storage capacity of the programmed experiment. If there is sufficient memory space, a new experiment will be started. This button has no effect if an experiment is already running.

- **STOP:** This button interrupts the data recording of the experiment currently running (if there is one). The data saved up to that moment will remain unchanged; all of the remaining values (corresponding to observations/readings not carried out) will have a zero value.

- **EXP:** This button is only enabled when the Multicounter is at rest (there is no experiment running). When this button is pressed, a menu is accessed in which it

is possible to select the number of the experiment, the data of which is shown on the display. This selection also affects the experiment whose data are sent through the RS-232 Communications port (see the chapter regarding communications), deleted or revised. DATA&TIME are also on the MENU. The date and time at which the experiment is to be carried out can also be set.

- **MENU:** When the **Multicounter** is in rest mode, pressing this button accesses the Menu for control over various programming functions. These functions are extensively covered in the chapter in this Manual detailing the Programming and Start-up of this instrument.

- **ESC:** This button is used to exit the menu options once they have been modified in any way. Using this button will leave the options unchanged, that is, as they were prior to being modified.

- **ENTER:** This button is used to confirm any menu option selected. It is used to express acceptance or enter a programming option.

7.2. CONTROL UNIT REAR PANEL

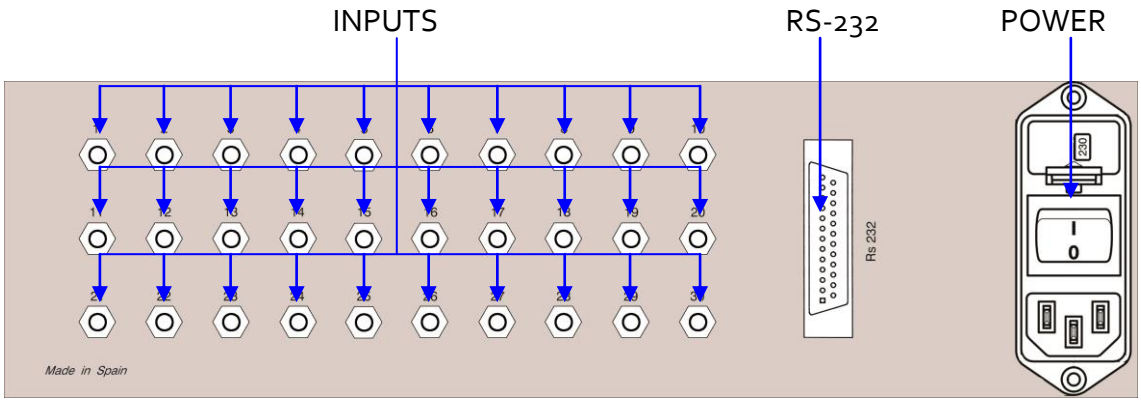

Figure 8. LE 3806 Rear Panel.

- **INPUTS:** There are 30 inputs with 3.5mm stereo connector jacks to connect either up to 15 rotameters or up to 30 activity wheels.

- **RS-232:** DB25 female connector used to connect the LE 3806 with a computer serial port to transmit experimental data to the **Sedacom** software.

- **POWER:** Power inlet, main switch and fuse holder.

8. EQUIPMENT CONNECTION

8.1. ROTAMETERS

Up to 15 rotameters can be connected to the LE 3806. The following figure features an example of connection with 1 rotameter to simplify the schematic.

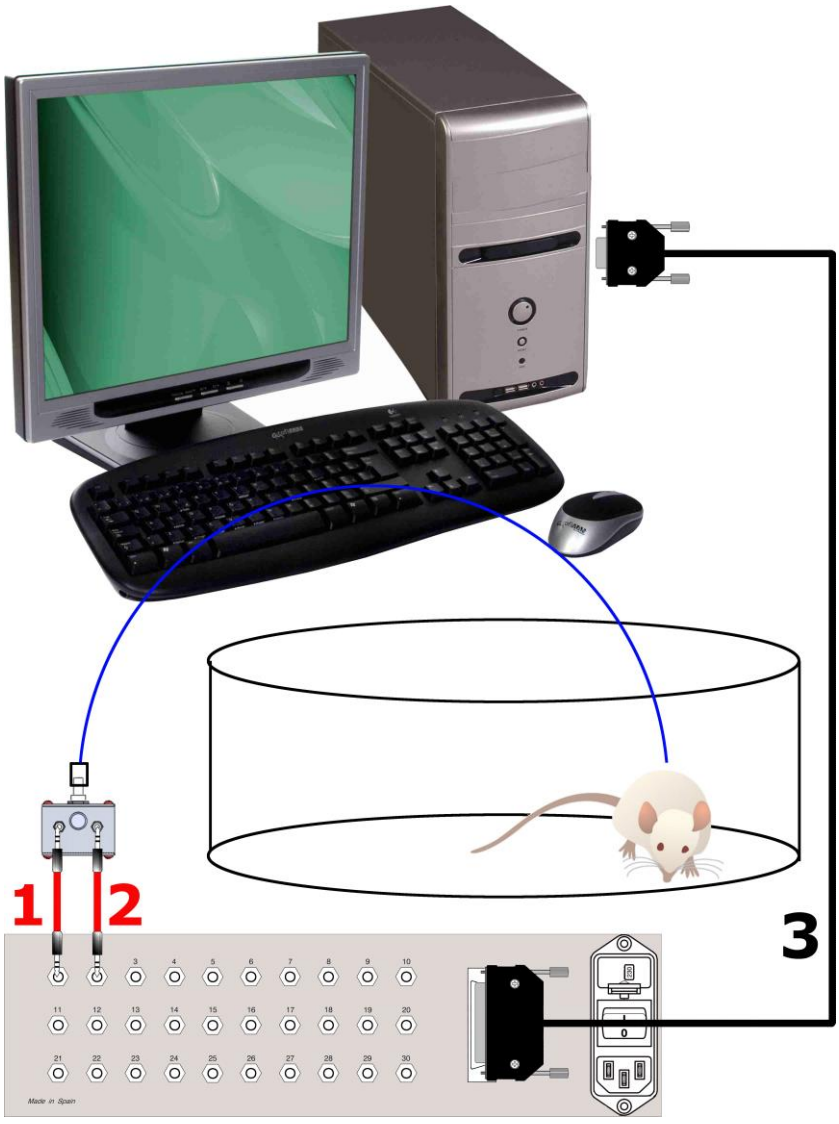

Figure 9. Example of connection of 1 Rotameter to LE 3806.

The cables and necessary connections are listed in the following table:

	FROM	TO	CABLE
1	LE 3806 input 1	Rotameter output 1	3.5mm stereo jack
2	LE 3806 input 2	Rotameter output 2	3.5mm stereo jack
3	LE 3806 RS-232	PC serial port	DB25 to DB9 cable

8.2. ACTIVITY WHEEL

Up to 30 activity wheels can be connected to the LE 3806. The following figure features an example of connection with 2 activity wheels to simplify the schematic.

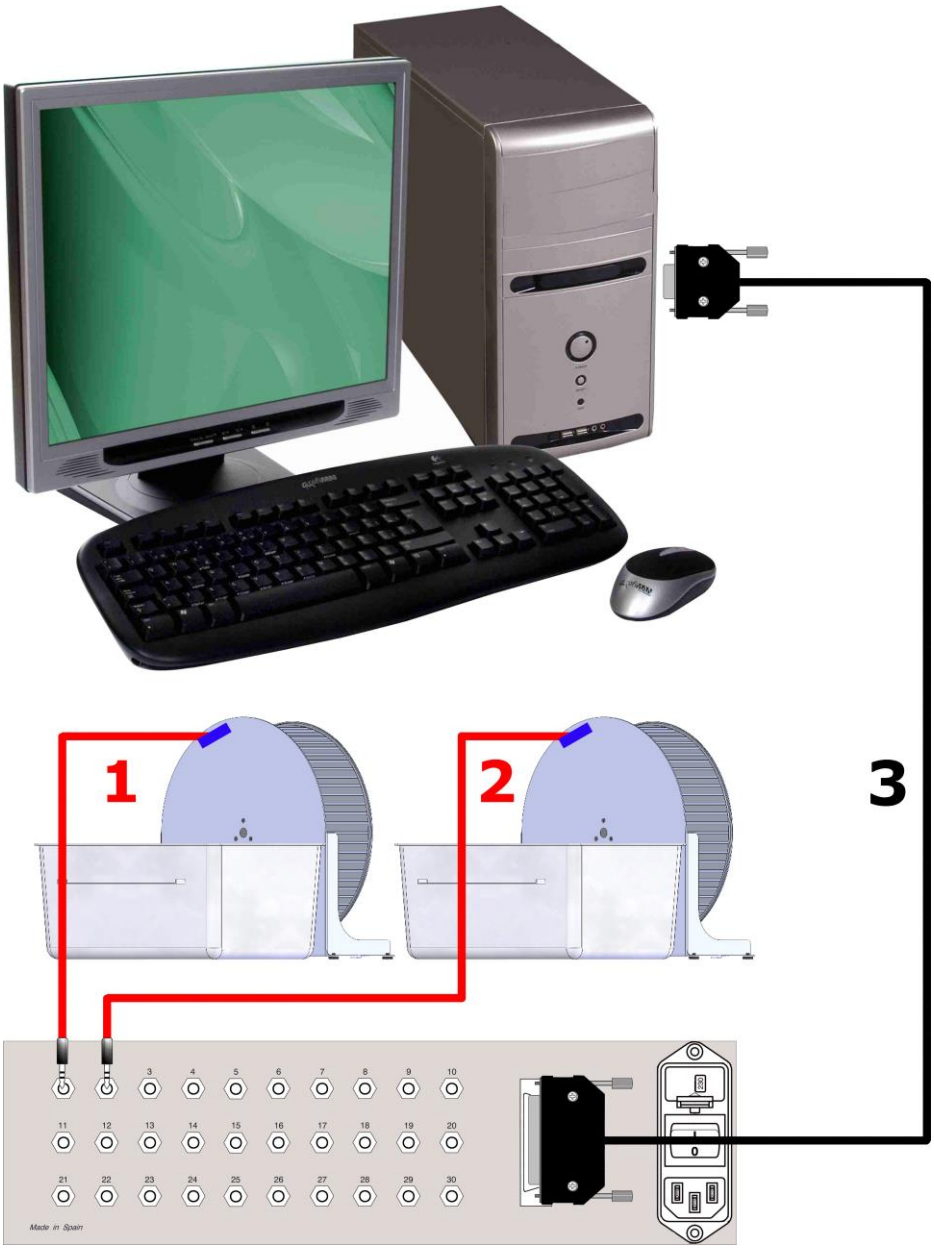

Figure 10. Example of connection of 2 activity wheels with an LE 3806.

The cables and necessary connections are listed in the following table:

	FROM	TO	CABLE
1	LE 3806 input 1	Activity Wheel 1	3.5mm stereo jack
2	LE 3806 input 2	Activity Wheel 2	3.5mm stereo jack
3	LE 3806 RS-232	PC serial port	DB25 to DB9 cable

9. EQUIPMENT SET-UP

In order to make efficient use of the **Multicounter,** the parameters governing its operation must be defined. These parameters are:

1. Number of input channels.
2. Total duration of the experiment.
3. Duration of each observation interval.
4. Current date and time (this is optional information that can be linked to the data to unequivocally identify them). These data are specifically connected to each new experiment. It is therefore possible to enter new values for these parameters every time a new experiment is started. To do so, go to EXP.

These data are permanently stored in the memory of the **Multicounter,** even when the instrument is disconnected from the mains voltage supply. They are not affected by memory deletion operations. This allows the same parameters defined for the last work session to be reused.

It is also necessary to ensure that the appropriate information is presented to each one of the corresponding input connections.

It is advisable to avoid the unnecessary accumulation of information in the memory of the **Multicounter**. Despite the instrument having extensive memory capacity, it is not unlimited and periodically deleting data is recommended.

The **Multicounter** does not have the ability to know beforehand how much memory will be available until the actual time in which it is attempted to start the new experiment.

When a new experiment is begun (the "START" button is pressed), the **Multicounter** checks to ensure that there is enough storage space for the experiment. If not, a warning message will notify the user of this situation and will not allow the experiment to start until enough memory capacity has been freed up.

9.1. THE CONTROL MENU

The control menu is only accessible when the **Multicounter** is not acquiring data (this is clearly visible because the main timer in the top left-hand corner of the display is stopped).
When the "MENU" button is pressed with the instrument at rest, a Menu similar to the Sampling menu shown in Figure 11 appears on the display.

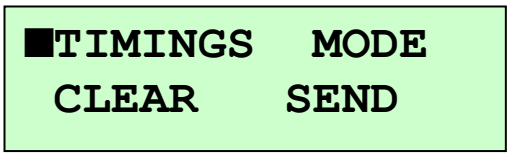

Figure 11. Screen shown when the Control menu is called up.

A flashing cursor, which can be moved using the up and down arrow buttons (↑, ↓), appears linked to the first of the options. Pressing the "ENTER" button selects the option over which the cursor is located.

Each of the options of this Menu allows a different aspect of the functions available on the **Multicounter** to be programmed.

9.2. PROGRAMMING OF TIMINGS

Selecting the "TIMINGS" option accesses a Menu in which it is possible to programme all of the time intervals that determine the work mode of the Multicounter. They can all range from 1 second up to 99 days, 23 hours, 59 minutes and 59 seconds.

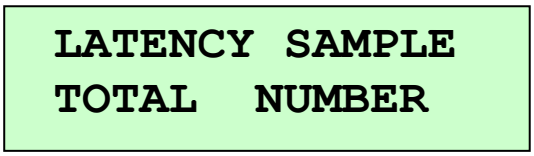

Figure 12. Timings screen.

It is not possible to define times that are not coherent with the limits stipulated in the previous paragraph (more than 23 hours or more than 59 minutes or seconds). The programmable timings (see Figure 13) are as follows:

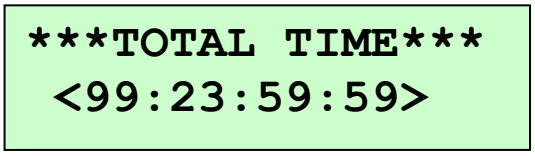

Figure 13. Screen shown while programming in one of the parameters associated with the Timing menu.

9.2.1. LATENCY INTERVAL (LATENCY)

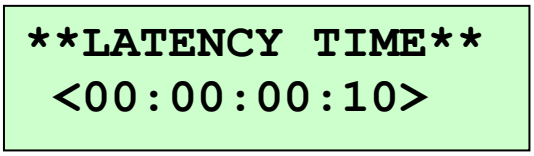

Figure 14. Latency screen.

This allows the setting of a time interval prior to the commencement of an experiment, during which the **Multicounter** must wait before starting data acquisition. When the experiment has been launched, it will begin following the latency interval.

9.2.2. TOTAL DURATION OF THE EXPERIMENT (TOTAL)

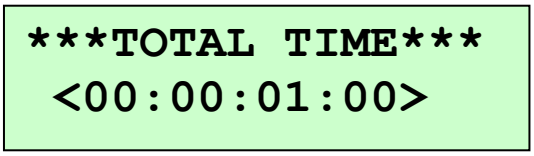

Figure 15. Total Time screen.

This is the total time during which the data of an experiment must be recorded. A certain number of independent observations are carried out during this time period, the duration of which is separately established (see next paragraph). The number of observations is the whole of the ratio. This is the resultant whole part of the ratio between the total duration of the experiment and the duration of each observation.

The duration of the experiment is always equal to the value programmed in this section, even if the result of dividing the total duration by the duration of each observation gives a whole number. The time interval corresponding to the remainder of the division also forms part of the experiment, but data from it are NOT saved in memory while the experiment is being carried out.

9.2.3. DURATION OF EACH OBSERVATION (SAMPLE)

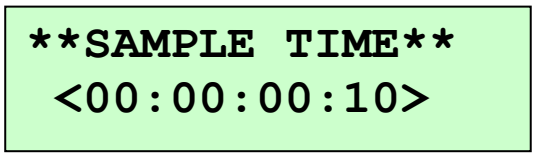

Figure 16. Sample Time screen.

This is the time interval during which the data observed on each of the input channels must be acquired and stored.

When data acquisition starts for a new sampling, the data logger for each input channel is reset to zero.

9.2.4. NUMBER OF OBSERVATIONS (NUMBER)

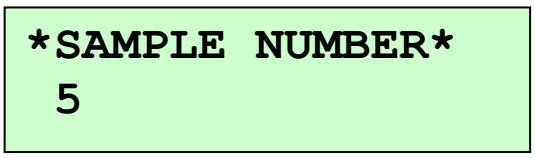

Figure 17. Sample Number screen.

This is the whole number resulting from dividing the duration of the experiment by the duration of each observation. This is a purely informative option that cannot be directly modified. NUMBER must be less than or equal to 5330. If not, the message **"Error NUMBER>5330"** will appear on the display.

The values of the parameters cited in the preceding paragraphs must be consistent with each other. If not, errors will occur, on which the instrument will notify the user by displaying informative messages. The **Multicounter** does not accept programming of an observation interval duration greater than the total duration of the experiment, nor does it allow duration intervals equal to zero (except for the latency interval, which can be set to this value). It is not possible to exit the option the instrument is working on while error status is maintained.

9.3. NUMBER OF CHANNELS AND WORKING MODE

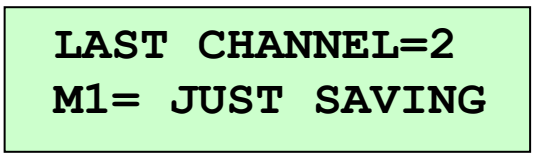

Figure 18. Number of channels and Working Mode screen.

Both parameters are controlled by a menu accessed by selecting the "MODE" option on the control menu. This menu option controls the following parameters through two options presented on each line of the display:

9.3.1. NUMBER OF ACTIVE CHANNELS

The number of active channels is selected by indicating the number corresponding to the last active channel. Therefore, active channels range from channel Nº 1 through channel Nº n, where "n" is the value selected for this field.

To set a new number of active channels, simply enter a new value for the last channel selected and press "ENTER".

9.3.2. WORKING MODE

This allows selection of the mode in which data are saved as they are acquired. The **Multicounter** has the following modes. Press "ENTER" to move between them:

- **Just save (M1 – JUST SAVING):**

In this working mode, the data are saved in the memory of the **Multicounter** as they are acquired. The acquisition limits (run time, number of samples available, etc.), are determined by the amount of free memory in the **Multicounter**. It does not require the **Multicounter** to be connected to any additional output device.

- **Save and send (M2 – SAVE & SEND):**

This is the same as the working mode described in the previous paragraph, but additionally, whenever a sampling is completed, the values of each of the active counters are sent out of the instrument through the RS-232 Com port. The **Multicounter** must be connected to an output device (printer, computer).

- **Just send (M3 – JUST SENDING**):

In this working mode, the data are NOT saved in the memory of the **Multicounter**, and are only presented on the Com port when a sampling is finished. This working mode thus ensures a practically indefinite working time, regardless of the memory capacity of the **Multicounter**; which does not need to be connected to an output device (serial printer, computer).

Whenever the "ENTER" button is pressed, the current working mode cycles through Mode 1, Mode 2 and Mode 3 (corresponding to M1, M2 and M3, respectively). The mode selected corresponds to the current mode shown on the display when exiting this option.

9.4. MAINTAINING DATA MEMORY

When the Menu option "CLEAR" is selected, a new menu is accessed through which it is possible to delete all the data from the memory of the **Multicounter,** or selectively delete those corresponding to a given experiment.

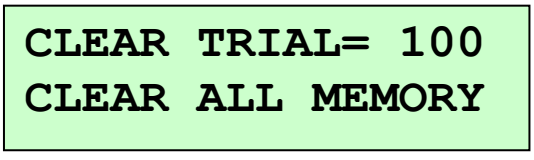

Figure 19. Clear screen.

When only one experiment is deleted, the "EXP" button can be used to select an experiment other than the current one.

Deleting one or all experiments means that there will be more free memory that can be used for new experiments. The delete operation does NOT affect the parameter memory (those corresponding to work interval timings); these remain unchanged.

NOTE: It is NOT possible to recover accidentally deleted data.

When the memory of the **Multicounter** is completely free of data, the sampling display shows the message: "NO DATA IN MEMORY".

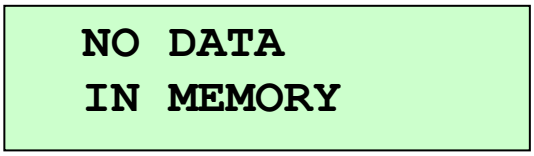

Figure 20. Empty memory screen.

9.5. COMMUNICATION OF DATA

This is the Menu option that controls the sending of information via the Com port.
Two options appear when selecting this option, which are:

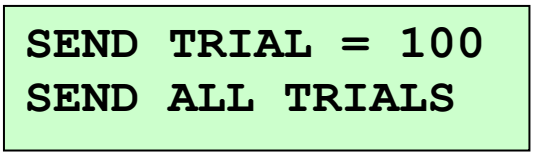

Figure 21. Send data screen.

- **Send only the data corresponding to an experiment selected:**

In this instance, the number corresponding to the current experiment is shown. The "EXP" button enables any other number to be chosen out of existing experiments.

- **Send the data corresponding to all of the experiments present in the data memory:**

Sends all data stored in memory.

If the LE 3806 has not been connected to computer, the display will show the following error message:

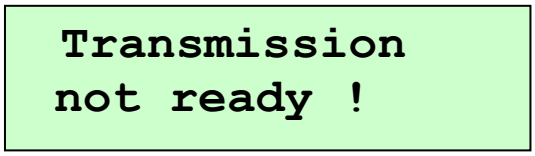

Figure 22. Transmission error screen.

9.6. STARTING UP AN EXPERIMENT

When the different working parameters of the **Multicounter** have been programmed, data acquisition can be enabled. To do this, press the "START" button, which will initiate the following process:

1. The main timer (top right-hand corner of the display) is set in motion, first counting down from the programmed latency interval to zero, and then upwards until reaching the total programmed time. This timer therefore indicates the time elapsed from the commencement of the experiment.

2. The experiment number counter (top right-hand corner of the display) indicates the number of the current experiment. This value increases by 1 every time the "START" button is pressed.

3. The sampling number counter (bottom left-hand corner of the display) indicates the number of the sample that is being collected. This value increases every time the programmed duration interval of each observation is completed.

4. The counter of the value of the accumulator of channel "nn" (bottom right-hand corner) indicates the number of counts saved in the interval of the current observation on channel "nn". Use the up and down arrow buttons to obtain the counter linked to the other channels.

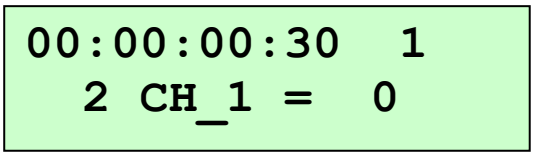

Figure 23. Example of screen during data acquisition.

5. If the "STOP" button is pressed while an experiment is running, data acquisition corresponding to this experiment is halted. It is not possible to restart this process.

10. COMMUNICATION WITH THE SEDACOM SOFTWARE

The purchase of the **Sedacom** software is needed for transferring the data to a computer (please contact your local sales delegate for more information). The **Sedacom** software reference is composed by a USB Flash key containing the software Installer, a License for use and **Sedacom** User's Manual. Follow next instructions:

- Please refer to the **Sedacom** User's Manual for instructions on how to install and use the software with the present device.
- A serial port (RS232) communication cable (provided with the present device) is needed for the connection of the present device to the computer in which the **Sedacom** software is installed. Please refer to the present User's Manual chapter 8 for instructions on how to connect this cable to the device.
- If the computer doesn't have any serial port, the RS232/USB adapter is needed (ref. CONRS232USB, contact your local provider for more information)

NOTE: the RS232 communication cable provided with the device is used for connecting the device with any associated software (**Sedacom,** etc.). Even when the device is used without software in first instance this cable is to be preserved and kept in a secure place in case the need of using the system with a software arises in the future. In this last case, if the user lost the cable, a new one should be purchased to his local sales delegate (ref. CONRS232). The warranty duration of this cable is the same than the warranty duration of the device.

11. PROCEDURE TO REPLACE THE BATERY

The LE3806 Multicounter has a 12V 2000mAh battery allowing it to function without being connected to the mains. If this battery no longer works (when the equipment is operated in standalone mode only lasts a few minutes) must be changed. It is implied that battery is fully charged, if we have only made a partial charge of the battery and the autonomous operation only lasts a few minutes is normal. The batteries have a limited number of charge cycles, and as they age the charge each time is lower.

To replace the battery follow the steps below:

Figure 24. Battery.

1. Unplug the machine from the mains.

2. Remove the top lid by unscrewing the 4 screws on the corners to get inside the equipment.

3. Looking at the equipment from the front on the left side you will locate the battery.

4. Disconnect the positive and negative battery poles by pulling from the Fast on connectors.

5. To free the battery the U-shaped piece must be removed by unscrewing the two nuts at both ends of this piece.

6. After removing the faulty battery put the new battery with the same specifications as the exhaust one (see chapter 13).

7. Secure the battery in place with the U-shaped piece screwing the nuts on both ends of the piece.

8. Connect the red cable to the positive pole and the black cable to the negative pole.

9. Close the box by placing the lid and screwing the corner screws

10. Connect the equipment to the mains and charge the battery a minimum of 8 hours by keeping the equipment turned on.

After removing the defective battery you should not throw it away. Take the NiMH battery to a waste treatment facility.

12. TROUBLESHOOTING

When input jack stereo cables are connected or disconnected while the control unit is on, a short circuit could be caused between ground and 5V that will cause the control unit to crash. This problem can also happen if a mouse escapes and gnaws the cables, producing a short circuit.

One of the following error messages will be displayed on the screen:

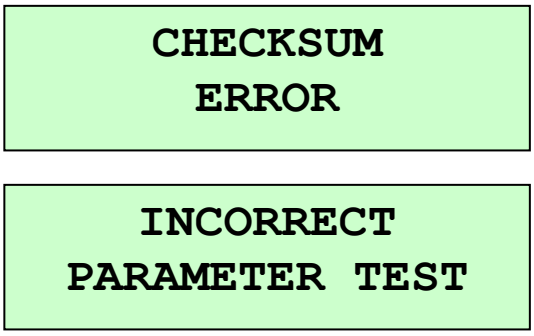

Figure 25. Error messages.

In order to access data stored in memory press the **ENTER** button and then the **EXP** button. You will be able to send stored data to the computer to save them from this menu.

When the control unit crashes, a loss of timing parameter settings will occur. Once you have saved stored data, you will have to reset the control unit. To do so, follow these steps:

1) Turn off control unit.

2) Keep **START** button pressed while you turn on the control unit.

3) The following message will be displayed:

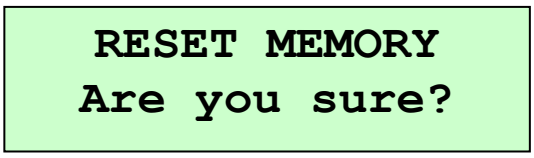

Figure 26. Reset memory confirmation.

4) Press **ENTER** button to confirm.

5) Enter timing parameters again (see chapter 9.2 in this manual).

13. SPECIFICATIONS

POWER SUPPLY	
Input voltage:	115 /230 VAC
Frequency:	50 /60 Hz
Fuse:	2 fuses 5mm*20mm 500mA 250V fast
Maximum Power:	15 W
BATERY:	
Voltage:	12V
Capacity:	2000mAh
Technology:	NiMH
Length:	80mm
Height:	51mm
Width:	30mm
Weight:	300gr
INPUT	
Number:	30
Connector:	3.5mm stereo jack
Voltage range:	2-28 V DC
ENVIRONMENTAL CONDITIONS	
Operating temperature:	10°C to +40°C
Operating relative humidity:	0% to 85% RH, non-condensing
Storage temperature:	0°C to +50°C, non-condensing
COMUNICATIONS OUTPUT	
Standard Interface:	RS232C
Connector:	Delta 25 contacts female connector
DIMENTIONS	
Width x Height x Depth:	340mm x 110mm x 340 mm
Weight:	5.44 kg

DECLARACIÓN DE CONFORMIDAD
DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITÉ

Nombre del fabricante: Manufacturer's name: Nom du fabricant:	**Panlab s.l.u.** www.panlab.com info@panlab.com
Dirección del fabricante: Manufacturer's address: Adresse du fabricant:	Energía, 112 08940 Cornellà de Llobregat Barcelona SPAIN
Declara bajo su responsabilidad que el producto: Declares under his responsibility that the product: Déclare sous sa responsabilité que le produit:	**MULTICOUNTER**
Marca / Brand / Marque:	**PANLAB**
Modelo / Model / Modèle:	**LE 3806**

Cumple los requisitos esenciales establecidos por la Unión Europea en las directivas siguientes:
Fulfils the essential requirements established by The European Union in the following directives:
Remplit les exigences essentielles établies pour l'Union Européenne selon les directives suivantes:

2006/95/EC	Directiva de baja tensión / Low Voltage / Basse tensión
2004/108/EC	Directiva EMC / EMC Directive / Directive CEM
2012/19/EU	La Directiva de Residuos de Aparatos Eléctricos y Electrónicos (WEEE) / The Waste Electrical and Electronic Equipment Directive (WEEE) / Les déchets d'équipements électriques et électroniques (WEEE)
2011/65/EU	Restricción de ciertas Sustancias Peligrosas en aparatos eléctricos y electrónicos (ROHS) / Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) / Restriction de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques (ROHS)
2006/42/EC	Directiva mecánica / Machinery directive / Directive mécanique

Para su evaluación se han aplicado las normas armonizadas siguientes:
For its evaluation, the following harmonized standards were applied:
Pour son évaluation, nous avons appliqué les normes harmonisées suivantes:

Seguridad / Safety / Sécurité:	**EN61010-1:2011**
EMC:	**EN61326-1:2012 Class A**[1]
FCC:	**FCC47CFR 15B Class A**
Safety of machinery:	**EN ISO 12100:2010**

[1]This equipment complies with the limits for class A equipment in accordance with CISPR 11 definition and is classed as a Class A digital device, pursuant to CFR Title 47 part 15 of the FCC Rules and is intended to be used in an industrial environment.

En consecuencia, este producto puede incorporar el marcado CE y FCC:
Consequently, this product can incorporate the CE marking and FCC:
En conséquence, ce produit peut incorporer le marquage CE et FCC:

CE FC

En representación del fabricante:
Manufacturer's representative:
En représentation du fabricant:

Carme Canalís
General Manager
Panlab s.l.u., a division of Harvard BioScience

Cornellà de Llobregat, Spain
30/04/2014

(GB) *Note on environmental protection:*

After the implementation of the European Directive 2002/96/EU in the national legal system, the following applies:
Electrical and electronic devices may not be disposed of with domestic waste.Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that a product is subject to these regulations. By recycling, reusing the materials or other forms of utilising old devices, you are making an important contribution to protecting our environment.

(E) *Nota sobre la protección medioambiental:*

Después de la puesta en marcha de la directiva Europea 2002/96/EU en el sistema legislativo nacional, Se aplicara lo siguiente:
Los aparatos eléctricos y electrónicos, así como pilas y baterías, no se deben tirar a la basura doméstica. El usuario está legalmente obligado a llevar los aparatos eléctricos y electrónicos, así como pilas y baterías, al final de su vida útil a los puntos de recogida municipales o devolverlos al lugar donde los adquirió. Los detalles quedaran definidos por la ley de cada país. El símbolo en el producto, en las instrucciones de uso o en el embalaje hace referencia a ello. Gracias al reciclaje, a la reutilización de materiales i a otras formas de reciclaje de aparatos usados, usted contribuirá de forma importante a la protección de nuestro medio ambiente.

(F) *Remarques concernant la protection de l'environnement :*

Conformément à la directive européenne 2002/96/CE, et afin d'atteindre un certain nombre d'objectifs en matière de protection de l'environnement, les règles suivantes doivent être appliquées.
Elles concernent les déchets d'équipement électriques et électroniques. Le pictogramme "picto" présent sur le produit, son manuel d'utilisation ou son emballage indique que le produit est soumis à cette réglementation. Le consommateur doit retourner le produit usager aux points de collecte prévus à cet effet. Il peut aussi le remettre à un revendeur.En permettant enfin le recyclage des produits, le consommateur contribuera à la protection de notre environnement. C'est un acte écologique.

(D) *Hinweis zum Umweltschutz:*

Ab dem Zeitpunkt der Umsetzung der europäischen Richtlinie 2002/96/EU in nationales Recht gilt folgendes:
Elektrische und elektronische Geräte dürfen nicht mit dem Hausmüll entsorgt werden. Der Verbraucher ist gesetzlich verpflichtet, elektrische und elektronische Geräte am Ende ihrer Lebensdauer an den dafür eingerichteten, öffentlichen Sammelstellen oder an die Verkaufstelle zurückzugeben. Einzelheiten dazu regelt das jeweilige Landesrecht. Das Symbol auf dem Produkt, der Gebrauchsanleitung oder der Verpackung weist auf diese Bestimmungen hin. Mit der Wiederverwertung, der stofflichen Verwertung oder anderer Formen der Verwertung von Altgeräten leisten Sie einen wichtigen Beitrag zum Schutz unserer Umwelt.

(I) *Informazioni per protezione ambientale:*

Dopo l'implementazione della Direttiva Europea 2002/96/EU nel sistema legale nazionale, ci sono le seguenti applicazioni:
I dispositivi elettrici ed elettronici non devono essere considerati rifiuti domestici. I consumatori sono obbligati dalla legge a restituire I dispositivi elettrici ed elettronici alla fine della loro vita utile ai punti di raccolta collerici preposti per questo scopo o nei punti vendita. Dettagli di quanto riportato sono definiti dalle leggi nazionali di ogni stato. Questo simbolo sul prodotto, sul manuale d'istruzioni o sull'imballo indicano che questo prodotto è soggetto a queste regole. Dal riciclo, e re-utilizzo del material o altre forme di utilizzo di dispositivi obsoleti, voi renderete un importante contributo alla protezione dell'ambiente.

(P) *Nota em Protecção Ambiental:*

Após a implementação da directiva comunitária 2002/96/EU no sistema legal nacional, o seguinte aplica-se:
Todos os aparelhos eléctricos e electrónicos não podem ser despejados juntamente com o lixo doméstico Consumidores estão obrigados por lei a colocar os aparelhos eléctricos e electrónicos sem uso em locais públicos especficos para este efeito ou no ponto de venda. Os detalhes para este processo são definidos por lei pelos respectivos países. Este símbolo no produto, o manual de instruções ou a embalagem indicam que o produto está sujeito a estes regulamentos. Reciclando, reutilizando os materiais dos seus velhos aparelhos, esta a fazer uma enorme contribuição para a protecção do ambiente.